

# Study on development of value added products from oyster mushroom (*Pleurotus florida*)

PARUL BORA AND ASHA KAWATRA

Oyster mushroom (*Pleurotus florida*) is highly perishable poses serious marketing problems in the peak seasonal period as well as commercial production resulting in gluts and distress sales. With a view to ameliorate the problem, processing of mushroom to develop some novel value-added products was undertaken from the fresh oyster mushrooms. Very good quality of oyster mushroom preserves (*murraba*) was successfully prepared. Besides, the pickle preparation from the fresh mushroom through the traditional technique, success was achieved in making products like mushroom ketch-up, mushroom candy and mushroom chips. All the value added products were found to be organoleptically acceptable for their colour, appearance, flavour, taste, texture and overall acceptability on the 9 point Hedonic scale by a panel of ten judges. The evaluation of the products was done every month for the period of six months for the above said quality characters. Value added product named mushroom preserve was rated with the highest sensory score followed by mushroom chips. Preparation of these products will not only reduces losses but will also enhance the income by value- addition and better marketing of this horticulture crop in the peak period of harvesting, glut in the market can be checked by adopting appropriate post-harvest technology to process surplus mushroom into novel value-added products. Mushroom protein is intermediate in quality between vegetable and animal proteins and the supplementary value of mushroom protein in vegetarian diet is of considerable significance. Mushrooms can be used as a supplementary food item to the growing population of the developing countries where the population mainly depends on cereal based foods. Due to high quality nutrients and their medical and therapeutic properties, mushrooms have become popular worldwide. During peak harvest season, market gets saturated quickly and growers resort to distress sale. Consequently, unsold mushrooms become a total loss. Hence, methods need to develop for the production of processed products from mushrooms.

**Key Words :** Value added, Organoleptic, Mushroom, Harvesting, Glut season, Perishable

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## INTRODUCTION

Oyster mushroom (*Pleurotus florida*) have a short shelf-life of about 24 hour at the ambient temperature due to high moisture, delicate texture and unique physiology (blackening

and autolysis) (Saxena and Rai, 1990). The shelf -life of horticulture produce can be extended by simply harvesting them before ripening which is not applicable to the mushrooms. Even after harvesting mushrooms continue to respire, grow, mature and thus results in veil opening, weight loss, browning and microbial spoilage. In India, the fresh mushroom market is largely a contribution of marginal and small farmers who have limited resources and, therefore, are dependent on the local market for sale of their produce. The growers face consequences of oversaturated market and distress sale at highly non remunerative prices. The retention of fresh mushroom at the level of growers, whole seller, retailer and consumer further results in deterioration in the quality of

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the produce and deterioration in the quality of the produce and economical loss. In the peak periods of harvesting, gluts in the market can be checked by adopting appropriate post-harvest technology to process surplus mushrooms into novel value-added products rather going only for canning or pickling. These value added products are the need of the hour for the mushroom growers not only to reduce the losses but also to enhance the income by value-addition provide neutral low fat, protein rich food to the consumers (Arumuganathan *et al.*, 2003 and 2005) and the boost the consumption of this important horticulture crop. The studies were conducted to develop some novel value-added products namely mushroom murraba, mushroom ketchup, mushroom candy and mushroom chips from fresh button mushrooms.

## METHODOLOGY

The present study was carried out at fresh oyster mushrooms :

### Mushroom murraba (Preserve) :

Freshly harvested mushroom were graded, washed, pricked and blanched in 0.05 per cent potassium meta bisulphite (KMS) for 5 minutes. It was treated with 40 per cent of its weight of sugar daily for 3 days. On the third day, mushrooms were taken out from the syrup and 0.1 per cent citric acid and remaining 40 per cent of sugar were mixed in the syrup. After making its concentration to 65 °Brix, mushrooms were added in the syrup and thus the good quality murraba (preserve) was prepared. The prepared murraba was packed in plastic jar and kept for further quality analysis.

### Mushroom ketchup :

Freshly harvested oyster mushroom were washed in 0.05 per cent KMS solution, sliced and cooked in 50 per cent of water for 20 minutes. Mushroom paste was prepared using a mixer grinder 0.2 per cent arrarote, 1.5 per cent acetic acid and other ingredients were mixed in the paste and cooked to bring to its TSS to 35 °Brix. Then the ketchup was filled in the sterilized bottles and kept for further analysis. The ingredients used in the ketchup were salt 10 per cent, sugar 25 per cent, acetic acid 1.5 per cent, sodium benzoate 0.065 per cent, onion 10 per cent, garlic 0.5 per cent, ginger 3 per cent, cumin 1 per cent, black pepper 0.1per cent, red chilly powder 1 per cent, arrarote 0.2 per cent. Thus, the ketchup of good flavour, taste and appearance was prepared. Joshi *et al.*

(1991) developed sweet chutney from oyster mushroom and the storage life of the product was more than a year.

### Mushroom candy :

Fresh mushroom after harvesting were subjected to washing and halved into two pieces. Halved pieces were blanched for 5 minutes in 0.05 per cent KMS solution. After draining for half an hour they were treated with sugar. Sugar treatment was given at the rate of 1.5 kg sugar per kg of blanched mushroom. Initially sugar was divided into three equal parts. On the 1st day, blanched mushroom were covered with one part of sugar and kept for 24 hours. Next day, the same mushrooms were covered with 2<sup>nd</sup> part of sugar and again kept overnight and on the third day mushrooms were removed from the sugar syrup. This sugar syrup was boiled with 3<sup>rd</sup> part of sugar and 0.1 per cent citric acid to bring its concentration upto 70°Brix. Blanched mushrooms were mixed with this syrup and again the contents were boiled for 5 minutes to bring its concentration upto brix 72 °Brix. After cooling, mushrooms were removed from the syrup and drained for half an hour. The drained mushrooms were placed on the sorting tables to separate only defective and unwanted pieces. Finally mushroom pieces were dried in a cabinet dryer at 60°C for about 10 hours. As soon as these became crispy, all mushrooms were packed in polypropylene bags and stored in a cool and dry place for further analysis.

### Mushroom chips :

Study was conducted to prepare ready to eat mushroom chips. The freshly harvested oyster mushrooms were washed, sliced and blanched in 2 per cent brine solution. The mushrooms were dipped overnight in a solution of 0.1 per cent of citric acid +1.5 per cent of NaCl+0.3 per cent of red chilly powder. After draining off the solution, the mushrooms were dried in cabinet dryer at 60° C for 8 hours. Then it was fried using the refined oil and good quality chips were prepared. Garam masala and other spices can be spread over the chips to enhance the taste. After spices mixing, the chips were packed in polypropylene packets and sealed after proper labelling. These packets were kept at room temperature for further analysis.

## OBSERVATIONS AND ASSESSMENT

All the value-added products were evaluated for their colour, appearance, flavour, taste, texture and overall

**Table 1 : Organoleptic evaluation of value-added products prepared from fresh oyster mushroom**

Name of product	Colour	Appearance	Flavour	Taste	Texture	Overall acceptability	Mean	Storage life (Months)
Mushroom Murraba	8.2	7.9	7.9	8.4	8.6	8.4	8.23	12
Mushroom Ketchup	7.5	7.2	8.0	8.2	8.2	8.0	7.85	12
Mushroom Candy	7.8	7.8	7.8	8.4	8.5	8.0	8.05	12
Mushroom Chips	8.0	7.6	8.2	8.4	8.3	8.1	8.10	3

acceptability through organoleptic evaluation on the 9 point Hedonic scale by a panel of ten judges (Rangana, 1994). The evaluation of the products was conducted every month for the above said quality characters. It is seen from the Table 1 that the value added product named mushroom murraba (preserve) was rated with the highest sensory score by the taste panel. The mushroom murabba (preserve) was very good in taste, quality and appearance like amla murraba. As far as the shelf-life of the product is concerned, mushroom murraba could be stored for six months without any change in its keeping quality in general and texture in particular. The colour of the murraba also did not change during the course of study. It was totally accepted in the organoleptic evaluation. The mushroom ketchup was also liked by the panel of judges and the products had storage life of six months. The oyster mushroom candy, the novel product also had excellent taste and keeping quality even six months. The colour also remained light brown which is similar to the colour of the candy. In case of mushroom chips, the keeping quality was excellent upto 3 months in polypropylene packets. The flavour of the mushroom chips was highly acceptable in the organoleptic evaluation. Taste wise the chips were very tasty and giving good aroma of mushrooms but they had become little bit softer after 3 months. The texture of the product, which is a deciding factor of the product's acceptability, was good in general and it ranged from 8.2 to 8.6. With regard to taste, the products named mushroom murraba, mushroom candy and mushroom chips scored equal and the maximum point in evaluation. As far as the overall acceptability is concerned, mushroom murabba topped the list and it was followed by mushroom chips, mushroom candy and mushroom ketchup in that order. Similar findings were made by Chandrasekhar *et al.* (2002); Lal, and Sharma (1995); Anu (2007); Mane *et al.*, 2003; Rai *et al.* (2003) and Adule *et al.* (1981) worked on simple preservation of oyster mushroom and the results coincide with the present results.

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